



STIC Search Report

EIC 1700

STIC Database Tracking Number: 126149

TO: Lynette T Umez-Eronini

Location: REM 9A64

Art Unit : 1765

July 6, 2004

Case Serial Number: 09/916381

From: Kathleen Fuller

Location: EIC 1700

REMSSEN 4B28

Phone: 571/272-2505

Kathleen.Fuller@uspto.gov

Search Notes

Mellerson, Kendra

From: Unknown@Unknown.com
Sent: Wednesday, June 30, 2004 8:28 PM
To: STIC-EIC1700
Subject: Generic form response

ResponseHeader=Commercial Database Search Request

AccessDB#= 12649

LogNumber=

Searcher=

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MyDate=Wed Jun 30 20:27:42 EDT 2004

submitto=STIC-EIC1700@uspto.gov

Name=Lynette T. Umez-Eronini

Empno=

Phone=21470

Artunit=1765

Office=REM 9A64

Serialnum=09916381

PatClass=252/79.1 and 438/745

Earliest=7/31/2000

Format1=paper

Searchtopic=Inventors: Haga, Sadao and Itou, Katsuji

Please search claims for the combination of the the following:

hydrofluoric acid, nitric acid and hexafluorosilicic acid, then search for hydrofluoric acid, nitric acid, hexafluorosilicic acid and acetic acid.

. An etching solution containing at least hydrofluoric acid, nitric acid and hexafluorosilicic acid, the concentration of the hexafluorosilicic acid being not less than 10% by weight based on the weight of the etching solution.

. An etching solution according to claim 1, wherein the concentration of the hexafluorosilicic acid is 5 to 40% by weight based on the weight of the etching solution.

. An etching solution according to claim 1, wherein the concentration of the hydrofluoric acid is 1 to 40% by weight based on the weight of the etching solution.

. An etching solution according to claim 1, wherein the concentration of the nitric acid is 20 to 60%

SCIENTIFIC REFERENCE BR
Sci. & Tech. Info. Cntr

JUL 1

Pat. & T.M. Office

weight based on the weight of the etching solution.

An etching solution according to claim 1, further comprising acetic acid.

6. An etching solution according to claim 5, wherein the concentration of the acetic acid is 0.01 to 5% by weight based on the weight of the etching solution.

7. An etching solution according to claim 1, which is used for etching a silicon substrate.

Comments=

send=SEND

=> FILE HCAPLU

FILE 'HCAPLUS' ENTERED AT 16:49:55 ON 06 JUL 2004
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FILE COVERS 1907 - 6 Jul 2004 VOL 141 ISS 2
 FILE LAST UPDATED: 5 Jul 2004 (20040705/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> D QUE L42

L30	1	SEA FILE=REGISTRY ABB=ON	"HEXAFLUOROSILICIC ACID"/CN
L32	1	SEA FILE=REGISTRY ABB=ON	NITRIC ACID/CN
L33	1	SEA FILE=REGISTRY ABB=ON	ACETIC ACID/CN
L34	2306	SEA FILE=HCAPLUS ABB=ON	L30
L35	740	SEA FILE=HCAPLUS ABB=ON	L34 AND (HF OR L32 OR HYDROFLUORIC ACID)
L36	162	SEA FILE=HCAPLUS ABB=ON	L35 AND (L32 OR HNO3 OR NITRIC ACID)
L37	35	SEA FILE=HCAPLUS ABB=ON	L36 AND ETCH?
L38	16	SEA FILE=HCAPLUS ABB=ON	L36 AND ETCH? (4A) (SOLUTION? OR COMBIN? OR COMPOSITION?)
L40	10	SEA FILE=HCAPLUS ABB=ON	L37 AND CONCENTRAT?
L41	7	SEA FILE=HCAPLUS ABB=ON	L37 AND (ACETIC ACID OR L33)
L42	24	SEA FILE=HCAPLUS ABB=ON	L38 OR L40 OR L41

=> FILE WPIX

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FILE LAST UPDATED: 2 JUL 2004 <20040702/UP>
 MOST RECENT DERWENT UPDATE: 200442 <200442/DW>
 DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
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>>> THE DISPLAY LAYOUT HAS BEEN CHANGED TO ACCOMODATE THE
NEW FORMAT GERMAN PATENT APPLICATION AND PUBLICATION
NUMBERS. SEE ALSO:
<http://www.stn-international.de/archive/stnews/news0104.pdf> <<<

=> D QUE L51

L30	1	SEA FILE=REGISTRY ABB=ON	"HEXAFLUOROSILICIC ACID"/CN
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L34	2306	SEA FILE=HCAPLUS ABB=ON	L30
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L40	10	SEA FILE=HCAPLUS ABB=ON	L37 AND CONCENTRAT?
L41	7	SEA FILE=HCAPLUS ABB=ON	L37 AND (ACETIC ACID OR L33)
L43	0	SEA FILE=WPIX ABB=ON	L38 OR L40 OR L41
L45	109	SEA FILE=WPIX ABB=ON	HEXAFLUOROSILICIC
L46	24	SEA FILE=WPIX ABB=ON	L45 AND (HF OR HYDROFLUORIC ACID)
L47	6	SEA FILE=WPIX ABB=ON	L46 AND (NITRIC ACID OR HNO3)
L49	3	SEA FILE=WPIX ABB=ON	L47 AND ETCH?
L50	2	SEA FILE=WPIX ABB=ON	L47 AND ACETIC ACID
L51	4	SEA FILE=WPIX ABB=ON	L43 OR L49 OR L50

=> FILE INSPEC

FILE 'INSPEC' ENTERED AT 16:50:31 ON 06 JUL 2004
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=> D QUE L52

L30	1	SEA FILE=REGISTRY ABB=ON	"HEXAFLUOROSILICIC ACID"/CN
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L35	740	SEA FILE=HCAPLUS ABB=ON	L34 AND (HF OR L32 OR HYDROFLUORIC ACID)
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L38	16	SEA FILE=HCAPLUS ABB=ON	L36 AND ETCH?(4A) (SOLUTION? OR

COMBIN? OR COMPOSITION?)

L40 10 SEA FILE=HCAPLUS ABB=ON L37 AND CONCENTRAT?
 L41 7 SEA FILE=HCAPLUS ABB=ON L37 AND (ACETIC ACID OR L33)
 L43 0 SEA FILE=WPIX ABB=ON L38 OR L40 OR L41
 L45 109 SEA FILE=WPIX ABB=ON HEXAFLUOROSILICIC
 L46 24 SEA FILE=WPIX ABB=ON L45 AND (HF OR HYDROFLUORIC ACID)
 L47 6 SEA FILE=WPIX ABB=ON L46 AND (NITRIC ACID OR HNO3)
 L49 3 SEA FILE=WPIX ABB=ON L47 AND ETCH?
 L50 2 SEA FILE=WPIX ABB=ON L47 AND ACETIC ACID
 L52 0 SEA FILE=INSPEC ABB=ON L43 OR L49 OR L50

=> FILE COMPENDEX

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L30 1 SEA FILE=REGISTRY ABB=ON "HEXAFLUOROSILICIC ACID"/CN
 L32 1 SEA FILE=REGISTRY ABB=ON NITRIC ACID/CN
 L33 1 SEA FILE=REGISTRY ABB=ON ACETIC ACID/CN
 L34 2306 SEA FILE=HCAPLUS ABB=ON L30
 L35 740 SEA FILE=HCAPLUS ABB=ON L34 AND (HF OR L32 OR HYDROFLUORIC
 ACID)
 L36 162 SEA FILE=HCAPLUS ABB=ON L35 AND (L32 OR HNO3 OR NITRIC ACID)
 L37 35 SEA FILE=HCAPLUS ABB=ON L36 AND ETCH?
 L38 16 SEA FILE=HCAPLUS ABB=ON L36 AND ETCH?(4A) (SOLUTION? OR
 COMBIN? OR COMPOSITION?)
 L40 10 SEA FILE=HCAPLUS ABB=ON L37 AND CONCENTRAT?
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 L53 0 SEA FILE=COMPENDEX ABB=ON L43 OR L49 OR L50

=> FILE JICST

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L30 1 SEA FILE=REGISTRY ABB=ON "HEXAFLUOROSILICIC ACID"/CN
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 L36 162 SEA FILE=HCAPLUS ABB=ON L35 AND (L32 OR HNO3 OR NITRIC ACID)
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 L38 16 SEA FILE=HCAPLUS ABB=ON L36 AND ETCH?(4A) (SOLUTION? OR COMBIN? OR COMPOSITION?)
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 L43 0 SEA FILE=WPIX ABB=ON L38 OR L40 OR L41
 L45 109 SEA FILE=WPIX ABB=ON HEXAFLUOROSILICIC
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 L47 6 SEA FILE=WPIX ABB=ON L46 AND (NITRIC ACID OR HNO3)
 L49 3 SEA FILE=WPIX ABB=ON L47 AND ETCH?
 L50 2 SEA FILE=WPIX ABB=ON L47 AND ACETIC ACID
 L54 0 SEA FILE=JICST-EPLUS ABB=ON L43 OR L49 OR L50

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 L36 162 SEA FILE=HCAPLUS ABB=ON L35 AND (L32 OR HNO3 OR NITRIC ACID)
 L37 35 SEA FILE=HCAPLUS ABB=ON L36 AND ETCH?
 L38 16 SEA FILE=HCAPLUS ABB=ON L36 AND ETCH?(4A) (SOLUTION? OR COMBIN? OR COMPOSITION?)
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 L47 6 SEA FILE=WPIX ABB=ON L46 AND (NITRIC ACID OR HNO3)
 L49 3 SEA FILE=WPIX ABB=ON L47 AND ETCH?
 L50 2 SEA FILE=WPIX ABB=ON L47 AND ACETIC ACID
 L56 2 SEA FILE=JAPIO ABB=ON L43 OR L49 OR L50

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=> D QUE L57

L30 1 SEA FILE=REGISTRY ABB=ON "HEXAFLUOROSILICIC ACID"/CN
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 L33 1 SEA FILE=REGISTRY ABB=ON ACETIC ACID/CN
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 L35 740 SEA FILE=HCAPLUS ABB=ON L34 AND (HF OR L32 OR HYDROFLUORIC ACID)
 L36 162 SEA FILE=HCAPLUS ABB=ON L35 AND (L32 OR HNO3 OR NITRIC ACID)
 L37 35 SEA FILE=HCAPLUS ABB=ON L36 AND ETCH?
 L38 16 SEA FILE=HCAPLUS ABB=ON L36 AND ETCH?(4A) (SOLUTION? OR COMBIN? OR COMPOSITION?)
 L40 10 SEA FILE=HCAPLUS ABB=ON L37 AND CONCENTRAT?
 L41 7 SEA FILE=HCAPLUS ABB=ON L37 AND (ACETIC ACID OR L33)
 L43 0 SEA FILE=WPIX ABB=ON L38 OR L40 OR L41
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 L46 24 SEA FILE=WPIX ABB=ON L45 AND (HF OR HYDROFLUORIC ACID)
 L47 6 SEA FILE=WPIX ABB=ON L46 AND (NITRIC ACID OR HNO3)
 L49 3 SEA FILE=WPIX ABB=ON L47 AND ETCH?
 L50 2 SEA FILE=WPIX ABB=ON L47 AND ACETIC ACID
 L57 0 SEA FILE=NTIS ABB=ON L43 OR L49 OR L50

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 L58 28 DUP REM L42 L51 L56 (2 DUPLICATES REMOVED)

=> D L58 ALL 1-28

L58 ANSWER 1 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2004:371040 HCAPLUS
 DN 140:392676
 ED Entered STN: 07 May 2004
 TI Aqueous phosphoric acid compositions for cleaning organic and plasma etched residues from semiconductor devices
 IN Daviot, Jerome; Reid, Christopher; Holmes, Douglas
 PA EKC Technology, Inc., USA
 SO PCT Int. Appl., 25 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C11D
 CC 46-6 (Surface Active Agents and Detergents)
 Section cross-reference(s): 76
 FAN.CNT 1
 PATENT NO. KIND DATE APPLICATION NO. DATE

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

PI WO 2004037962 A2 20040506 WO 2003-US33500 20031021
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 2002-419968P P 20021022
US 2002-430365P P 20021203

AB The composition comprises $\geq 75\%$ water, 0.5-10% phosphoric acid, an alkaline compound containing a quaternary ammonium hydroxide and/or a hydroxyamine, and optionally ≥ 1 other acid compds., a fluoride-containing compound and/or ≥ 1 alkanolamine. The composition optionally contains addnl. components such as organic solvents, chelating agents, amines, and/or surfactants.

ST phosphoric acid cleaning compn aq semiconductor device; plasma etched residue cleaning compn

IT Alcohols, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(amino; aqueous phosphoric acid compns. for cleaning organic and plasma etched residues from semiconductor devices)

IT Semiconductor devices
(aqueous phosphoric acid compns. for cleaning organic and plasma etched residues from semiconductor devices)

IT Acids, uses
Quaternary ammonium compounds, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(aqueous phosphoric acid compns. for cleaning organic and plasma etched residues from semiconductor devices)

IT Detergents
(cleaning compns.; aqueous phosphoric acid compns. for cleaning organic and plasma etched residues from semiconductor devices)

IT Quaternary ammonium compounds, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(hydroxides; aqueous phosphoric acid compns. for cleaning organic and plasma etched residues from semiconductor devices)

IT 50-21-5, Lactic acid, uses 50-81-7, Ascorbic acid, uses 64-18-6, Formic acid, uses 65-85-0, Benzoic acid, uses 75-75-2, Methanesulfonic acid 76-05-1, Trifluoroacetic acid, uses 77-92-9, Citric acid, uses 78-96-6, Isopropanolamine 79-09-4, Propionic acid, uses 79-14-1, Glycolic acid, uses 87-69-4, Tartaric acid, uses 104-15-4, Toluenesulfonic acid, uses 107-92-6, Butyric acid, uses 109-83-1, 2-(N-Methylamino)ethanol 110-15-6, Succinic acid, uses 111-41-1, 2-(2-Aminoethylamino)ethanol 111-42-2, 2-(2-Hydroxyethylamino)ethanol, uses 123-41-1, Choline hydroxide 141-43-5, Monoethanolamine, uses 141-82-2, Malonic acid, uses 144-62-7, Oxalic acid, uses 149-91-7, Gallic acid, uses 156-87-6, 3-Amino-1-propanol 526-95-4, Gluconic acid 1341-49-7, Ammonium bifluoride 2466-09-3, Pyrophosphoric acid 3710-84-7 6168-72-5, 2-Amino-1-propanol 6915-15-7, Malic acid 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 7803-49-8, Hydroxyamine, uses 12125-01-8, Ammonium fluoride 13444-71-8, Periodic acid 16961-83-4, Fluorosilicic

acid 25321-41-9, Xylenesulfonic acid
 RL: TEM (Technical or engineered material use); USES (Uses)
 (aqueous phosphoric acid compns. for cleaning organic and plasma etched
 residues from semiconductor devices)

L58 ANSWER 2 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:696193 HCAPLUS

DN 139:217985

ED Entered STN: 05 Sep 2003

TI Manufacture of sodium aluminosilicate glass substrates for magnetic
 recording disks by polishing, chemical reinforcing and surface treatment

IN Saito, Yasuhiro; Mitani, Kazuishi; Umeyama, Tatsuro; Okuhata, Koji;
 Hashimoto, Toshiaki

PA Japan

SO U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM C03C021-00

ICS C03C019-00; C03C015-00

NCL 065030140; 065031000; 428064200; 134001000; 134003000; 065061000

CC 57-1 (Ceramics)

Section cross-reference(s): 77

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003164005	A1	20030904	US 2003-346562	20030117
	JP 2003277102	A2	20031002	JP 2002-123452	20020425
PRAI	JP 2002-10672	A	20020118		
	JP 2002-123452	A	20020425		

AB Provided is a method for manufacturing a glass substrate for an information
 recording medium, which is advantageous in that oozing of an alkali and
 deformation of a texture are suppressed. The glass substrate is chemical
 reinforced, and a texture is formed in the glass substrate, and then
 treated with a neutral or alkaline aqueous solution In the texture forming
 step, the

surface of the glass substrate is **etched** in a depth of 0.5 to 10
 nm.

ST manufg glass substrate magnetic recording disk polishing chem treatment

IT Sonication

(cleaning treatment; manufacture of sodium aluminosilicate glass substrates
 for magnetic recording disks by polishing, chemical reinforcing and
 surface treatment)

IT Magnetic recording materials

(glass substrates for; manufacture of sodium aluminosilicate glass
 substrates for magnetic recording disks by polishing, chemical reinforcing
 and surface treatment)

IT **Etching**

Glass substrates

Magnetic disks

Polishing

Reducing agents

Wet scrubbing

(manufacture of sodium aluminosilicate glass substrates for magnetic
 recording disks by polishing, chemical reinforcing and surface treatment)

IT Electrolytic **solutions**

(post-**etching** treatment with; manufacture of sodium
 aluminosilicate glass substrates for magnetic recording disks by
 polishing, chemical reinforcing and surface treatment)

- IT Aluminosilicate glasses
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
 (sodium aluminosilicate, substrates; manufacture of sodium aluminosilicate glass substrates for magnetic recording disks by polishing, chemical reinforcing and surface treatment)
- IT 7782-44-7, Oxygen, uses 10028-15-6, Ozone, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (dissolved in water, treatment with; manufacture of sodium aluminosilicate glass substrates for magnetic recording disks by polishing, chemical reinforcing and surface treatment)
- IT 7732-18-5, Water, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (gas-dissolved in, post-**etching** treatment with; manufacture of sodium aluminosilicate glass substrates for magnetic recording disks by polishing, chemical reinforcing and surface treatment)
- IT **64-19-7, Acetic acid**, uses 77-92-9, Citric acid, uses 87-69-4, Tartaric acid, uses 141-82-2, Propanedioic acid, uses 144-62-7, Ethanedioic acid, uses 526-95-4, Gluconic acid 5329-14-6, Sulfamic acid 7647-01-0, Hydrochloric acid, uses 7664-39-3, **Hydrofluoric acid**, uses 7664-93-9, Sulfuric acid, uses **7697-37-2, Nitric acid**, uses **16961-83-4, Fluorosilicic acid**
 RL: NUU (Other use, unclassified); USES (Uses)
 (impurity removal with; manufacture of sodium aluminosilicate glass substrates for magnetic recording disks by polishing, chemical reinforcing and surface treatment)
- IT 1333-74-0, Hydrogen, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (in water, post-**etching** treatment with; manufacture of sodium aluminosilicate glass substrates for magnetic recording disks by polishing, chemical reinforcing and surface treatment)
- IT 75-59-2, Tetramethylammonium hydroxide
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (post-**etching** treatment with; manufacture of sodium aluminosilicate glass substrates for magnetic recording disks by polishing, chemical reinforcing and surface treatment)
- IT 50-81-7, Ascorbic acid, uses 7722-84-1, Hydrogen peroxide (H2O2), uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (reducing agents; manufacture of sodium aluminosilicate glass substrates for magnetic recording disks by polishing, chemical reinforcing and surface treatment)
- IT 1310-58-3, Potassium hydroxide, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (sonication solution; manufacture of sodium aluminosilicate glass substrates for magnetic recording disks by polishing, chemical reinforcing and surface treatment)

L58 ANSWER 3 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:809671 HCAPLUS

DN 139:326669

ED Entered STN: 15 Oct 2003

TI **Etching solution** for surface treatment of magnesium and/or magnesium alloy

IN Yomohara, Masanobu; Maejima, Naoshi; Yamazoe, Katsuyoshi; Yasuhara, Kiyotada

PA Nippon Paint Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C23F001-22

CC 56-6 (Nonferrous Metals and Alloys)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003293174	A2	20031015	JP 2002-104289	20020405
PRAI	JP 2002-104289		20020405		

AB The solution contains surfactant A and antifoaming agent B with A/B (weight ratio) being 100/0 to 80/20 and A + B (total **concentration**) being 100-5000 ppm. Preferably, A is a nonionic surfactant with HLB being 11-15. The solution may further contain F-compound C (fluorosilicic acid, fluoroaluminic acid, fluorotitanic acid, Na hydrogenfluoride, K hydrogenfluoride, and/or **HF**), and acid D (H3PO4, **HNO3**, H2SO4, oxalic acid, and/or **acetic acid**), where the F ion and/or F complex ion **concentration** is 0.01-0.5 g/L; and the total **concentration** of C + D is 0.2-10 g/L.

ST magnesium alloy surface treatment **etching soln**;
nonionic surfactant antifoaming agent **etching soln**;
acid fluorine compd **etching soln** magnesium

IT **Etching**

Surface treatment

(acid **etching solution** for surface treatment of magnesium and/or magnesium alloy)

IT Antifoaming agents

(**etching solution** containing; **etching**

solution for surface treatment of magnesium and/or magnesium alloy)

IT Surfactants

(nonionic, **etching solution** containing; **etching**

solution for surface treatment of magnesium and/or magnesium alloy)

IT **64-19-7, Acetic acid**, uses 144-62-7, Oxalic acid, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses **7697-37-2, Nitric acid**, uses

RL: NUU (Other use, unclassified); USES (Uses)

(**etching solution** containing; acid **etching**

solution for surface treatment of magnesium and/or magnesium alloy)

IT 1333-83-1, Sodium hydrogenfluoride 7664-39-3, Hydrogen fluoride, uses 7789-29-9, Potassium hydrogenfluoride 12021-95-3 **16961-83-4**, Fluorosilicic acid 17439-11-1, Fluorotitanic acid

RL: NUU (Other use, unclassified); USES (Uses)

(**etching solution** containing; **etching**

solution for surface treatment of magnesium and/or magnesium alloy)

IT 7439-95-4, Magnesium, processes

RL: PEP (Physical, engineering or chemical process); PYP (Physical

process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(**etching solution** for surface treatment of magnesium

and/or magnesium alloy)

IT 135860-09-2, AZ91D

RL: PEP (Physical, engineering or chemical process); PYP (Physical

process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(magnesium alloy; **etching solution** for surface treatment of magnesium and/or magnesium alloy)

L58 ANSWER 4 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1
 AN 2002:103429 HCAPLUS
 DN 136:159818
 ED Entered STN: 07 Feb 2002
 TI Mixed acid **solution** in **etching** process, process for producing the same, **etching** process using the same and process for producing semiconductor device with flat and smooth surfaces
 IN Haga, Sadao; Itou, Katsuji
 PA Mitsubishi Chemical Corporation, Japan; Nippon Kasei Chemical Company Limited
 SO Eur. Pat. Appl., 15 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 IC ICM H01L021-306
 ICS C23F001-24; C23F001-46
 CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 68

Applicant

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1178526	A2	20020206	EP 2001-117723	20010727
EP 1178526	A3	20040303		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
TW 511180	B	20021121	TW 2001-90118222	20010725
JP 2002115083	A2	20020419	JP 2001-227784	20010727
US 2002072235	A1	20020613	US 2001-916381	20010727
PRAI JP 2000-231018	A	20000731		

AB There is disclosed an **etching solution** containing at least **HF**, **HNO3** and hexafluorosilicic acid wherein the **concentration** of hexafluorosilicic acid is $\geq 10\%$ by weight based on the weight of the **etching solution**

ST acid **etching soln** silicon semiconductor device fabrication

IT **Etching**
 Semiconductor devices
 (mixed acid **solution** in **etching** process, process for producing same, **etching** process using same and process for producing semiconductor device with flat and smooth surfaces)

IT Acids, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (mixed acid **solution** in **etching** process, process for producing same, **etching** process using same and process for producing semiconductor device with flat and smooth surfaces)

IT 7440-21-3, Silicon, processes 7664-39-3, Hydrogen fluoride, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (mixed acid **solution** in **etching** process, process for producing same, **etching** process using same and process for producing semiconductor device with flat and smooth surfaces)

IT 64-19-7, Acetic acid, uses 7664-38-2,
 Phosphoric acid, uses 7697-37-2, Nitric acid

, uses **16961-83-4**, Hexafluorosilicic acid
 RL: TEM (Technical or engineered material use); USES (Uses)
 (mixed acid **solution** in **etching** process, process for
 producing same, **etching** process using same and process for
 producing semiconductor device with flat and smooth surfaces)

L58 ANSWER 5 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2002:575443 HCAPLUS
 DN 137:128349
 ED Entered STN: 02 Aug 2002
 TI Acidic **etching** for removal of oxide films and coatings from a
 metal substrate
 IN Kool, Lawrence Bernard; Ruud, James Anthony
 PA General Electric Company, USA
 SO U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM C23G001-02
 NCL 134003000
 CC 56-6 (Nonferrous Metals and Alloys)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002100493	A1	20020801	US 2001-771186	20010129
PRAI	US 2001-771186		20010129		

AB **Etching** or pickling with aqueous fluoro acid solution is applied for
 selective removal of oxide films or coating from the surface of metal,
 alloy, or polymer substrate. The aqueous bath contains the fluoro acids of
 Si, Ge, Ti, Zr, Al, or Ga, especially H₂SiF₆ or H₂ZrF₆. The acidic bath
 optionally includes an addnl. acid selected from H₃PO₄, **HNO₃**,
 H₂SO₄, HCl, or **HF**. The process is suitable for removal of worn
 or damaged protective oxide coating on superalloy substrate, especially for
 repair coating on gas-turbine parts.

ST fluoro acid **etching** oxide film removal substrate; acidic bath
 pickling oxide coating removal superalloy

IT **Etching**
 (acidic; acidic **etching** bath for removal of oxide films and
 coatings from metal substrates)

IT Pickling
 (acidic; acidic pickling bath for removal of oxide films and coatings
 from metal substrates)

IT Oxides (inorganic), processes
 RL: REM (Removal or disposal); PROC (Process)
 (films, removal of; acidic pickling bath for removal of oxide films and
 coatings from metal substrates)

IT Cast alloys
 RL: EPR (Engineering process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (nickel alloys, oxide removal on; acidic pickling bath for removal of
 oxide films and coatings from metal substrates)

IT Turbines
 (parts, oxide removal on; acidic pickling bath for removal of oxide
 films and coatings from metal substrates)

IT **64-19-7, Acetic acid**, uses 6303-21-5,
 Phosphinic acid 7601-90-3, Perchloric acid, uses 7647-01-0,
 Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-93-9,
 Sulfuric acid, uses **7697-37-2, Nitric acid**,
 uses 10034-85-2, Hydroiodic acid 10035-10-6, Hydrobromic acid, uses

13598-36-2, Phosphorous acid, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (etching bath containing; acidic etching bath for
 removal of oxide films and coatings from metal substrates)

IT 12021-95-3 16950-43-9 **16961-83-4**, Hexafluorosilicic acid
 17439-11-1, Fluorotitanic acid
 RL: TEM (Technical or engineered material use); USES (Uses)
 (etching bath containing; acidic etching bath for
 removal of oxide films and coatings from metal substrates)

L58 ANSWER 6 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2002:313191 HCAPLUS
 DN 136:328746
 ED Entered STN: 26 Apr 2002
 TI Pickling liquor containing **nitric acid**,
 hexafluorosilicic acid and hydrogen fluoride and pickling of stainless
 steel
 IN Yumitate, Kozo; Nonaka, Izumi; Amano, Shinobu; Suginaka, Tomohiro; Uesugi,
 Hiroyuki; Fujiwara, Masashi
 PA Kawasaki Steel Corp., Japan; NEC Corp.
 SO Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C23G001-08
 CC 55-6 (Ferrous Metals and Alloys)
 Section cross-reference(s): 76
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002121689	A2	20020426	JP 2000-311979	20001012
PRAI	JP 2000-311979		20001012		

AB The pickling liquor for stainless steel contains **HNO3** 50-150,
 H2SiF6 10-75, and **HF** ≤1 g/L. Waste solns. used for
etching and/or washing of electronic parts are used for
concentration adjustment of the pickling liquor. Stainless steel is
 pickled with the pickling liquor.

ST stainless steel pickling liquor **nitric acid**
 hexafluorosilicic acid

IT Recycling
 (of spent pickling liquor for; pickling liquor containing **nitric**
acid, hexafluorosilicic acid and hydrogen fluoride and pickling
 of stainless steel)

IT Pickling
 (pickling liquor containing **nitric acid**,
 hexafluorosilicic acid and hydrogen fluoride and pickling of stainless
 steel)

IT Electric apparatus
 (recycling of spent pickling liquor from; pickling liquor containing
nitric acid, hexafluorosilicic acid and hydrogen
 fluoride and pickling of stainless steel)

IT 11109-50-5, SUS304 12597-68-1, Stainless steel, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (pickling liquor containing **nitric acid**,
 hexafluorosilicic acid and hydrogen fluoride and pickling of stainless
 steel)

IT 7664-39-3, Hydrogen fluoride, uses **7697-37-2, Nitric**
acid, uses **16961-83-4**, Hydrogen hexafluorosilicate

(H₂SiF₆)

RL: TEM (Technical or engineered material use); USES (Uses)
(pickling liquor containing **nitric acid**,
hexafluorosilicic acid and hydrogen fluoride and pickling of stainless
steel)

L58 ANSWER 7 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:877268 HCAPLUS

DN 137:361373

ED Entered STN: 20 Nov 2002

TI Formation and processing of porous semiconductors using **etching**
solution of oxidant and fluorine-containing Lewis acid

IN Parbukov, Alexander

PA De Montfort University, UK

SO Brit. UK Pat. Appl., 39 pp.

CODEN: BAXXDU

DT Patent

LA English

IC ICM H01L021-306

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 52, 63, 73, 74

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 2373367	A1	20020918	GB 2000-30232	20001212
PRAI	GB 2000-30232		20001212		

AB A method for the manufacture or post-manufacturing processing of porous
semiconductor

material comprises treating substrate semiconductor material with an
etching solution containing a semiconductor oxidant and a
F-containing Lewis acid. The F-containing Lewis acid may be a F-containing
magic acid

(e.g. SbF₃.cntdot.HF or SbF₅HSO₃F), or may be prepared by dissoln.
of fluorides in an aqueous or ether solution of HF, or in gaseous
HF followed by solubilization into an aqueous or ether solution. The
Lewis acid may be prepared from ErF₄, TiF₄, ZrF₄, BF₃, PF₅, SiF₄ and SbF₅.
The semiconductor oxidant may be a chemical that can dissociate to form the
nitronium ion NO⁺ in the **etching solution** (e.g.
HNO₃). The porous material may be used for a hydrocarbon sensor,
where porous Si is coated by a metal layer. Other applications include
light emission devices, display devices, integrated circuits,
photodetectors and waveguides, and medical prostheses and implants.

ST porous semiconductor material etching Lewis acid

IT Lewis acids

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(etchants; formation and processing of porous semiconductors using
etching solution of oxidant and fluorine-containing Lewis
acid)

IT Electroluminescent devices

Etching

Integrated circuits

Optical detectors

Optical imaging devices

Optical waveguides

Photomasks (lithographic masks)

Porous materials

Semiconductor materials

Semiconductor sensors

- Solar cells
(formation and processing of porous semiconductors using **etching solution** of oxidant and fluorine-containing Lewis acid)
- IT Prosthetic materials and Prosthetics
(implants; formation and processing of porous semiconductors using **etching solution** of oxidant and fluorine-containing Lewis acid)
- IT 7637-07-2, Boron trifluoride, processes 7647-19-0, Phosphorus pentafluoride 7783-61-1, Tetrafluoro silane 7783-63-3, Titanium tetrafluoride 7783-64-4, Zirconium tetrafluoride 7783-70-2, Antimony pentafluoride 83474-90-2, Erbium tetrafluoride
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(Lewis acid etchant; formation and processing of porous semiconductors using **etching solution** of oxidant and fluorine-containing Lewis acid)
- IT 7440-04-2, Osmium, processes 7440-05-3, Palladium, processes 7440-06-4, Platinum, processes 7440-22-4, Silver, processes 7440-50-8, Copper, processes 7440-57-5, Gold, processes 7440-69-9, Bismuth, processes 7440-74-6, Indium, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(deposited conductive layer; formation and processing of porous semiconductors using **etching solution** of oxidant and fluorine-containing Lewis acid)
- IT 12021-95-3, Zirconate(2-), hexafluoro-, dihydrogen, (OC-6-11)-16872-11-0, Fluoroboric acid 16940-81-1, Hexafluorophosphoric acid 16950-06-4, Hexafluoroantimonic acid **16961-83-4**, Hexafluorosilicic acid 17439-11-1, Hexafluorotitanic acid 23854-38-8, Antimonate(1-), pentafluoro(fluorosulfato-κO)-, hydrogen, (OC-6-21)-59438-09-4 72121-43-8 474939-77-0
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(etchant; formation and processing of porous semiconductors using **etching solution** of oxidant and fluorine-containing Lewis acid)
- IT 409-21-2, Silicon carbide (SiC), processes 1303-00-0, Gallium arsenide, processes 1306-23-6, Cadmium sulfide, processes 1306-25-8, Cadmium telluride, processes 7440-21-3, Silicon, processes 7440-44-0D, Carbon, diamond-like 11105-01-4, Silicon nitride oxide 11148-21-3 12063-98-8, Gallium phosphide, processes 12064-03-8, Gallium antimonide 22398-80-7, Indium phosphide, processes 37382-15-3, Aluminum gallium arsenide (Al_{0.1}Ga_{0.9}As) 66580-07-2, Copper indium telluride 98743-25-0, Copper indium selenide 106070-25-1, Gallium indium arsenide (GaInAs)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(etching of; formation and processing of porous semiconductors using **etching solution** of oxidant and fluorine-containing Lewis acid)
- IT 1333-82-0, Chromium trioxide 7631-99-4, Sodium nitrate, processes 7632-00-0, Sodium nitrite **7697-37-2, Nitric acid**, processes 7722-64-7, Potassium permanganate 7775-11-3, Sodium chromate 14635-75-7, Nitrosonium tetrafluoroborate
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(oxidant; formation and processing of porous semiconductors using **etching solution** of oxidant and fluorine-containing Lewis acid)

L58 ANSWER 8 OF 28 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 2002-591306 [63] WPIX

DNN N2002-469198 DNC C2002-167411

TI Measurement of elements in a silicon substrate involves heating **etchant**-decomposed test specimen comprising **hexafluorosilicic** acid solution, to form silicon tetrafluoride as test solution.

DC L03 S03 U11

IN VIRAVAU, L

PA (SOIT-N) SOITEC SILICON ON INSULATOR TECHNOLOGIES; (VIRA-I) VIRAVAU L

CYC 101

PI WO 2002065097 A1 20020822 (200263)* FR 20 G01N001-40

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
NL OA PT SD SE SL SZ TR TZ UG ZM ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT
RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM
ZW

FR 2820821 A1 20020816 (200265) G01N001-28

EP 1360469 A1 20031112 (200377) FR G01N001-40

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
RO SE SI TR

US 2004029387 A1 20040212 (200412) H01L021-302

KR 2003087630 A 20031114 (200420) G01N001-40

AU 2002238623 A1 20020828 (200427) G01N001-40

ADT WO 2002065097 A1 WO 2002-FR521 20020212; FR 2820821 A1 FR 2001-1926
20010213; EP 1360469 A1 EP 2002-704803 20020212, WO 2002-FR521 20020212;
US 2004029387 A1 Cont of WO 2002-FR521 20020212, US 2003-637073 20030806;
KR 2003087630 A KR 2003-710603 20030812; AU 2002238623 A1 AU 2002-238623
20020212

FDT EP 1360469 A1 Based on WO 2002065097; AU 2002238623 A1 Based on WO
2002065097

PRAI FR 2001-1926 20010213

IC ICM G01N001-28; G01N001-40; H01L021-302

ICS C01B033-107; G01N027-62; H01L021-00; H01L021-461; H01L021-66

AB WO 200265097 A UPAB: 20021001

NOVELTY - Measurement at least one element in a silicon-containing material involves decomposing part of the material and forming a **hexafluorosilicic** acid solution, and heating the formed solution to produce silicon tetrafluoride, which is subsequently evaporated to obtain a measuring solution in which silicon content is reduced and the amounts of elements to be measured are preserved.

DETAILED DESCRIPTION - Process for measuring at least one element in a silicon-containing material (2) comprises:

(a) decomposing part of the material (2) with an **etchant** (6) to form a solution (7) containing **hexafluorosilicic** acid and the elements to be measured;

(b) heating the solution (7) so that at least part of the **hexafluorosilicic** acid is transformed into silicon tetrafluoride (9) and a substantial part of the silicon tetrafluoride (9) is evaporated, to obtain a solution for measurement in which the silicon content is reduced while preserving the amount of each element to be measured; and

(c) measuring at least one element in the solution to be measured.

USE - Determination of metallic element contamination of silicon

substrates used in the manufacture of optical, electronic and opto-electronic devices.

ADVANTAGE - The invention overcomes the disadvantages of previous processes by producing a measuring solution having a concentration and viscosity that is compatible with measurement by inductively coupled plasma mass spectrometry.

DESCRIPTION OF DRAWING(S) - The drawing illustrates the invented process.

Substrate 1

Silicon-containing material 2

Etchant 6

Hexafluorosilicic acid solution 7

Teflon container 8

Silicon tetrafluoride 9

Heating element 10

Inductively coupled mass spectrometry device 13

Dwg.1/1

FS CPI EPI

FA AB; GI

MC CPI: L04-A01; L04-C18; L04-C22

EPI: S03-E13D; U11-F01A5

L58 ANSWER 9 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:900210 HCAPLUS

DN 136:9622

ED Entered STN: 14 Dec 2001

TI Acidic **etching** for selective removal of aluminide diffusion coating from superalloy substrate

IN Kool, Lawrence Bernard; Ruud, James Anthony; Lagraff, John Robert

PA General Electric Company, USA

SO Eur. Pat. Appl., 12 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM C23F001-44

ICS F01D005-00; F01D025-00

CC 56-6 (Nonferrous Metals and Alloys)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1162286	A1	20011212	EP 2001-304773	20010531
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2002053985	A2	20020219	JP 2001-173362	20010608
PRAI	US 2000-591531	A	20000609		
AB	A diffusion or overlay coating on a superalloy substrate is selectively removed by acidic etching with aqueous bath containing a fluoro acid of Si, Ge, Ti, Zr, Al, and/or Ga, especially H ₂ SiF ₆ . The acidic bath optionally contains addnl. H ₃ PO ₄ , HNO₃ , H ₂ SO ₄ , or other inorg. acids. The process is suitable for selective removal of worn aluminide or Ni-Cr-Al-Y type coating on superalloy gas-turbine parts, or optionally on acid-resistant polymer substrates. The Ni-Co-Cr-Al-Y alloy coating .apprx.250 µm thick on cast Ni-superalloy parts was removed in 3 h at 80° by acidic etching in the stirred aqueous bath containing H ₂ SiF ₅ and H ₃ PO ₄ , with no corrosion of the superalloy substrate.				
ST	superalloy acidic etching removal worn aluminide coating; fluoro acid etching worn alloy coating removal				
IT	Polymers, processes				
	RL: CPS (Chemical process); PEP (Physical, engineering or chemical				

process); PROC (Process)
 (alloy coating on, **etching** for removal of; acidic
etching for removal of aluminide diffusion coating from
 superalloy substrate)

IT **Etching**
 (alloy coating removal by; acidic **etching** for removal of
 aluminide diffusion coating from superalloy substrate)

IT Turbines
 (blades, alloy coating on, **etching** for removal of; acidic
etching for removal of aluminide diffusion coating from
 superalloy substrate)

IT Coating process
 (diffusion, aluminide alloys; acidic **etching** for removal of
 aluminide diffusion coating from superalloy substrate)

IT Sulfonic acids, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (**etching** bath containing; acidic **etching** for removal of
 aluminide diffusion coating from superalloy substrate)

IT Coating removers
 (for aluminide alloys; acidic **etching** for removal of
 aluminide diffusion coating from superalloy substrate)

IT Cast alloys
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (superalloys, coating on; acidic **etching** for removal of
 aluminide diffusion coating from superalloy substrate)

IT **64-19-7, Acetic acid**, uses 6303-21-5,
 Phosphinic acid 7601-90-3, Perchloric acid, uses 7647-01-0,
 Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-39-3,
Hydrofluoric acid, uses 7664-93-9, Sulfuric acid, uses
7697-37-2, Nitric acid, uses 10034-85-2,
 Hydroiodic acid 10035-10-6, Hydrobromic acid, uses 13598-36-2,
 Phosphorous acid, uses 52861-00-4 61048-41-7 61048-42-8 76623-47-7
 RL: MOA (Modifier or additive use); USES (Uses)
 (**etching** bath containing; acidic **etching** for removal of
 aluminide diffusion coating from superalloy substrate)

IT 12021-95-3 16950-43-9 **16961-83-4**, Fluorosilicic acid
 17439-11-1, Fluorotitanic acid
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (**etching** bath with; acidic **etching** for removal of
 aluminide diffusion coating from superalloy substrate)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
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- (4) Furukawa Electric Co Ltd; DE 2421313 A 1974 HCAPLUS
- (5) Gen Electric; EP 1050604 A 2000 HCAPLUS
- (6) Henkel Corp; WO 9113186 A 1991 HCAPLUS
- (7) Henkel Corp; WO 9303198 A 1993 HCAPLUS
- (8) Missel, L; US 3514407 A 1970 HCAPLUS
- (9) Nippon Paint Co Ltd; EP 0106459 A 1984 HCAPLUS
- (10) Wetinghouse Electric; FR 950328 A 1949

L58 ANSWER 10 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:209783 HCAPLUS
 DN 132:230718
 ED Entered STN: 31 Mar 2000

TI Phosphoric acid **solution** and method for selectively
etching a silicon nitride film in semiconductor device fabrication
IN Hackett, Thomas B.; Hatcher, Zach, III
PA Ashland Inc., USA
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01L021-311
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 989597	A1	20000329	EP 1999-116743	19990827
	EP 989597	B1	20031112		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6162370	A	20001219	US 1998-141897	19980828
	SG 85120	A1	20011219	SG 1999-3490	19990719
	KR 2000017570	A	20000325	KR 1999-35773	19990827
	JP 2000133631	A2	20000512	JP 1999-240647	19990827
	AT 254337	E	20031115	AT 1999-116743	19990827
	US 6303514	B1	20011016	US 2000-652416	20000831
PRAI	US 1998-141897	A	19980828		

AB The invention relates to an aqueous H3PO4 **etch** bath **composition** with a readily soluble Si containing composition A Si compound such as hexafluorosilicic acid which is readily soluble in the bath is added. The bath does not contain **HNO3**, **HF**, or Group I or II elements. The baths were used in the etching step of composite semiconductor device manufacturing
ST silicon nitride selective etching phosphoric acid; semiconductor device fabrication silicon nitride etching bath

IT **Etching**
(bath; phosphoric acid **solution** and method for selectively **etching** silicon nitride film in semiconductor device fabrication)
IT Semiconductor device fabrication
(phosphoric acid **solution** and method for selectively **etching** silicon nitride film in semiconductor device fabrication)
IT **Etching**
(selective; phosphoric acid **solution** and method for selectively **etching** silicon nitride film in semiconductor device fabrication)
IT 12033-89-5, Silicon nitride, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); TEM (Technical or engineered material use); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(phosphoric acid **solution** and method for selectively **etching** silicon nitride film in semiconductor device fabrication)
IT 7664-38-2, Phosphoric acid, reactions **16961-83-4**, Hexafluorosilicic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(phosphoric acid **solution** and method for selectively **etching** silicon nitride film in semiconductor device fabrication)
IT 7440-21-3D, Silicon, compds., uses
RL: TEM (Technical or engineered material use); USES (Uses)

(phosphoric acid solution soluble; phosphoric acid **solution** and method for selectively **etching** silicon nitride film in semiconductor device fabrication)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) David, M; US 4092211 A 1978 HCAPLUS
- (2) Mitsubishi Electric Corp; DE 19648471 A 1997 HCAPLUS
- (3) Won, L; WO 9831768 A 1998 HCAPLUS
- (4) Ziger, D; US 5310457 A 1994 HCAPLUS
- (5) Ziger, D; US 5472562 A 1995 HCAPLUS

L58 ANSWER 11 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:381800 HCAPLUS

DN 133:12142

ED Entered STN: 08 Jun 2000

TI Procedure for the **concentration** regulation of acids in an acid mixture

IN Bauer, Theresia; Schuetzbach, Peter

PA Wacker Siltronic Gesellschaft fuer Halbleitermaterialien A.-G., Germany

SO Ger. Offen., 4 pp.

CODEN: GWXXBX

DT Patent

LA German

IC ICM G01N031-16

CC 79-2 (Inorganic Analytical Chemistry)

Section cross-reference(s): 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19852242	A1	20000608	DE 1998-19852242	19981112
PRAI	DE 1998-19852242		19981112		

AB The **concentration** of acids in an acid mixture, containing **nitric acid, hydrofluoric acid**, and hexafluorosilicic acid (optionally containing addnl. organic or inorg. components), especially from acid **etching** of silica and silicon, is determined by dynamic equivalence point titration, in which the sample is titrated with a basic titrant until selected inflection and end points are reached, depending on the pKa of the acid in question. The first end point is at an equivalence point corresponding to a hydrogen ion **concentration** of from 10⁻² to 10^{-3.5} M; the second end point is at an equivalence point with H⁺ **concentration** of from 10⁻⁴ to 10⁻⁵ M; the third end point is at an equivalence point of from 10⁻¹⁰ to 10⁻¹¹ M. Using the equivalence point data, with correction factors, the concns. of **nitric acid, hydrofluoric acid**, and hexafluorosilicic acid can be determined. If hexafluorosilicic acid is not present, two end points are used: (1) the first corresponding to a H⁺ **concentration** of from 10⁻² to 10⁻³ M, and (2) the second corresponding to a H⁺ **concentration** of 10⁻⁷ M.

ST acid base titrn mixed acid; silicon **etching** mixed acid titrn; silica **etching** mixed acid titrn; dynamic equivalence point titrn mixed acid detn

IT **Etching**
(acid, of silica and silicon; determination of mixed nitric, hydrofluoric, and hexafluorosilicic acids by dynamic equivalence point titration)

IT Titration
(acid-base, dynamic-equivalence-point; determination of mixed nitric, hydrofluoric, and hexafluorosilicic acids by dynamic equivalence point titration)

IT 7664-39-3, **Hydrofluoric acid**, analysis

7697-37-2, Nitric acid, analysis

16961-83-4, Hexafluorosilicic acid

RL: ANT (Analyte); ANST (Analytical study)

(determination of; determination of mixed nitric, hydrofluoric, and hexafluorosilicic acids by dynamic equivalence point titration)

L58 ANSWER 12 OF 28 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 2000-482638 [42] WPIX

DNC C2000-145176

TI Epoxy novolac resin composition, for treatment of metal and polymeric substrates, contains polymer or its acid salt having repeat units of mannich derivatives.

DC A21 A82 G02 M13

IN CHEN, S T; DING, H; WARBURTON, Y J

PA (CALG) CALGON CORP

CYC 90

PI WO 2000039187 A1 20000706 (200042)* EN 37 C08G059-06

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL

OA PT SD SE SL SZ TZ UG ZW

W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES

FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS

LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL

TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2000019407 A 20000731 (200050) C08G059-06

US 6248182 B1 20010619 (200137) C23C022-00

ADT WO 2000039187 A1 WO 1999-US30430 19991220; AU 2000019407 A AU 2000-19407 19991220; US 6248182 B1 US 1998-220285 19981223

FDT AU 2000019407 A Based on WO 2000039187

PRAI US 1998-220285 19981223

IC ICM C08G059-06; C23C022-00

ICS C08G059-14; C08G059-32; C08G059-62; C09D163-04; C23C022-83

AB WO 200039187 A UPAB: 20000905

NOVELTY - Composition contains a novolac resin, with a epoxy phenol derivative substituent, containing amine or ammonium groups, and mannich derivatives.

DETAILED DESCRIPTION - Composition comprises a polymer containing an epoxy novolac derived unit of formula (I).

R = group of formula (i) or (ii)

m + n = 1-4

X = H or CH3

Q = optionally branched aliphatic radical with 1-3 C, SO2, SO or O

R1-R4 = H, CqH2q+1 or CqH2q-OH

R5 = H, CqH2q+1, CqH2q-OH or CqH2q-C(O)OH

q = 1-18

USE - Used for coating metal or polymeric substrates (claimed).

ADVANTAGE - Corrosion resistance and/or adhesion properties of the metal substrates, are improved.

Dwg.0/0

FS CPI

FA AB; GI

MC CPI: A10-E01; A12-B04C; G02-A05E; M13-H05

L58 ANSWER 13 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:233566 HCAPLUS

DN 132:282477

ED Entered STN: 12 Apr 2000

TI Decorative Cr plating on Zn alloy

AU Wu, Hao
 CS P.B. 162, Xiangfan, Hubei, Xiangfan, 441002, Peop. Rep. China
 SO Biaomian Jishu (2000), 29(1), 41-42
 CODEN: BIJIF7; ISSN: 1001-3660
 PB Biaomian Jishu Bianjibu
 DT Journal
 LA Chinese
 CC 56-6 (Nonferrous Metals and Alloys)
 AB Cr was plated on Zn alloy for decorative purpose by mech. polishing of Zn alloy, washing with an organic solvent, degreasing with a solution containing 20-30 g L-1 Na₃PO₄ and 15-20 g L-1 Na₂CO₃ at 55-70°, chemical polishing with a solution containing CrO₃ 200-250 g L-1, **HF** 60-70, **HNO₃** 20-30, and H₂SO₄ 2.5-4 mL L-1 at 20-40° for 0.5-1.5 min, neutralizing with 30-50 g L-1 Na₂CO₃ **solution, etching** with 30% **HF solution**, electroplating of Cu in a solution containing CuCN 18-20, NaCN 30-34, and Na₂CO₃ 10-15 g L-1 at 40-60°, pH 11-12.6, and c.d. 1-3 A dm⁻² for 10-20 min, electroplating of Ni in a bath containing NiSO₄ 280-350, NiCl₂ 45-60, MgSO₄ 35-40, Na dodecyl sulfate 0.05-0.1, H₃BO₃ 38-45 g L-1, and additive at 35-50°, pH 4.2-4.8, and c.d. 1-3 A dm⁻², and electroplating of Cr in a bath containing CrO₃ 200-250, H₂SO₄ 1-1.5, H₂SiF₆ 4-6 g L-1 at 50-60° and c.d. 30-50 A dm⁻².
 ST chromium plating zinc alloy
 IT Electrodeposition
 (multilayer decorative electroplating of chromium on Zn alloy)
 IT Zinc alloy, base
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (multilayer decorative electroplating of chromium on Zn alloy)
 IT 497-19-8, Sodium carbonate, processes 1333-82-0, Chromic anhydride 7601-54-9, Sodium phosphate 7664-39-3, **Hydrofluoric acid**, processes 7664-93-9, Sulfuric acid, processes **7697-37-2, Nitric acid**, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (bath composition; multilayer decorative electroplating of chromium on Zn alloy)
 IT 143-33-9, Sodium cyanide 151-21-3, Sodium dodecyl sulfate, uses 544-92-3, Cuprous cyanide 7487-88-9, Magnesium sulfate, uses 7718-54-9, Nickel chloride, uses 7786-81-4, Nickel sulfate 10043-35-3, Boric acid, uses **16961-83-4**, Fluosilicic acid
 RL: TEM (Technical or engineered material use); USES (Uses)
 (bath composition; multilayer decorative electroplating of chromium on Zn alloy)
 IT 7440-02-0, Nickel, uses 7440-50-8, Copper, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (coating; multilayer decorative electroplating of chromium on Zn alloy)
 IT 7440-47-3, Chromium, processes
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (multilayer decorative electroplating of chromium on Zn alloy)
 L58 ANSWER 14 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2
 AN 1999:189268 HCAPLUS
 DN 130:204486
 ED Entered STN: 23 Mar 1999
 TI Quantitative method and device for analysis of mixed acid fluid in **etching** process and process control
 IN Sawada, Shirou; Kusano, Hiromichi; Yachi, Fumie
 PA Nippon Kasei Chemical Company Limited, Japan; Mitsubishi Chemical Corporation

SO PCT Int. Appl., 21 pp.
 CODEN: PIXXD2
 DT Patent
 LA Japanese
 IC ICM G01N031-00
 ICS H01L021-306
 CC 80-6 (Organic Analytical Chemistry)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9912026	A1	19990311	WO 1998-JP3808	19980827
	W: KR, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	JP 11194120	A2	19990721	JP 1998-222888	19980806
PRAI	JP 1997-247752		19970828		
	JP 1997-322263		19971107		
AB	A method for analyzing a mixed acid fluid in an etching process using nitric acid as a strong acid component and, in addition, hydrofluoric acid and/or one of other strong acids (excluding nitric acid and hydrofluoric acid) and hexafluorosilicic acid, wherein the concentration of hydrofluoric acid and/or other acid components is quant. determined by nonaq. neutralization titration, the concentration of nitric acid alone is sep. quant. determined by UV absorptiometry spectrophotometry, thus sep. determining each of the concns. of nitric acid , hydrofluoric acid and/or the above other strong acid components. The above anal. method is simple and can determine the concentration of each acid component in a short time. Further, the anal. method can also be utilized in an etching control method and a process for preparing the mixed acid fluid.				
ST	quant method device mixed acid fluid; etching process control				
IT	titrn UV spectrophotometry				
IT	Etching Titration UV and visible spectroscopy (quant. method and device for anal. of mixed acid fluid in etching process and process control)				
IT	Acids, analysis RL: AMX (Analytical matrix); ANST (Analytical study) (quant. method and device for anal. of mixed acid fluid in etching process and process control)				
IT	7664-39-3, Hydrofluoric acid , analysis 7697-37-2, Nitric acid , analysis 16961-83-4, Hexafluorosilicic acid RL: ANT (Analyte); ANST (Analytical study) (quant. method and device for anal. of mixed acid fluid in etching process and process control)				

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

- RE
 (1) Fuji Electric Co, Ltd; JP 01-242940 A 1989
 (2) Kawasaki Steel Corp; JP 03-107477 A 1991
 (3) Mitsubishi Kasei Corp; JP 06-163509 A 1994

L58 ANSWER 15 OF 28 JAPIO (C) 2004 JPO on STN
 AN 1999-194120 JAPIO
 TI METHOD AND APPARATUS FOR QUANTITATIVE ANALYSIS OF MIXED ACID SOLUTION IN **ETCHING** PROCESS AS WELL AS **ETCHING** CONTROL METHOD AND

PREPARATION OF THE MIXED ACID SOLUTION
 IN SAWADA SATORO; KUSANO HIROMICHI; YACHI FUMIE
 PA NIPPON KASEI CHEM CO LTD
 MITSUBISHI CHEMICAL CORP
 PI JP 11194120 A 19990721 Heisei
 AI JP 1998-222888 (JP10222888 Heisei) 19980806
 PRAI JP 1997-247752 19970828
 JP 1997-322263 19971107
 SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1999
 IC ICM G01N031-12
 ICS G01N021-33; G01N027-26; G01N033-00; H01L021-306
 AB PROBLEM TO BE SOLVED: To provide a method and an apparatus, for the
 quantitative analysis of a mixed acid solution in an **etching**
 process, in which the concentration of every acid component can be found
 simply and in a short time, to provide an **etching** control method
 which can use the method and the apparatus and to provide a preparation
 method for the mixed acid solution.
 SOLUTION: In an analytical method for a mixed acid solution in an
etching process, **nitric acid** is contained as a
 strong acid component, and, in addition, one kind out of
hydrofluoric acid and/or other strong acids (excluding
 the **nitric acid** and the **hydrofluoric**
acid) and **hexafluorosilicic acid** are contained. By a
 nonaqueous neutralization titration method, concentrations of components
 of the **hydrofluoric acid** and/or the other acids are
 quantitatively analyzed. Separately, only the concentration of the
nitric acid is quantitatively analyzed by an
 ultraviolet-part absorption spectrophotometric method. The respective
 concentrations of the components of the **nitric acid**,
 the **hydrofluoric acid** and/or the other strong acids
 are classified and found.
 COPYRIGHT: (C)1999,JPO

L58 ANSWER 16 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1996:554569 HCAPLUS
 DN 125:174999
 ED Entered STN: 17 Sep 1996
 TI **Etching solution** for pretreatment of platinum plating
 on titanium substrate and etching method
 IN Kimura, Takayuki
 PA Tanaka Precious Metal Ind, Japan
 SO Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 IC ICM C23F001-26
 ICS C25D003-50; C25D005-38
 CC 56-6 (Nonferrous Metals and Alloys)
 Section cross-reference(s): 72

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08176852	A2	19960709	JP 1994-336124	19941224
PRAI	JP 1994-336124		19941224		
AB	The etching solution contains 4-12N HNO3 , 2-24N H2SO4 , or 4-12N HCl with 0.05-0.5% fluorides. The fluoride may be HF , NaF , KF , NH4F , NH4HF2 , etc. The method involves removing surface oxide on Ti (alloy) substrate and etched with the solution to form uniform surface for Pt plating.				

ST platinum plating pretreatment etching titanium; fluoride etchant titanium
plating pretreatment

IT Electrodeposition and Electroplating
Etching
(**etching solution** containing fluoride for pretreatment of
Pt plating on Ti substrate)

IT Titanium alloy, base
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etching solution** containing fluoride for pretreatment of
Pt plating on Ti substrate)

IT **7697-37-2, Nitric acid, uses**
RL: TEM (Technical or engineered material use); USES (Uses)
(**etchant; etching solution** containing fluoride
for pretreatment of Pt plating on Ti substrate)

IT 1341-49-7, Ammonium hydrogen fluoride 7664-39-3, Hydrogen fluoride, uses
7681-49-4, Sodium fluoride, uses 7789-23-3, Potassium fluoride
12125-01-8, Ammonium fluoride 16872-11-0, Tetrafluoroboric acid
16961-83-4, Hexafluorosilicic acid
RL: MOA (Modifier or additive use); TEM (Technical or engineered material
use); USES (Uses)
(**etching solution** containing fluoride for pretreatment of
Pt plating on Ti substrate)

IT 7440-06-4, Platinum, miscellaneous
RL: MSC (Miscellaneous)
(**etching solution** containing fluoride for pretreatment of
Pt plating on Ti substrate)

IT 7440-32-6, Titanium, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etching solution** containing fluoride for pretreatment of
Pt plating on Ti substrate)

IT 7647-01-0, Hydrochloric acid, uses 7664-93-9, Sulfuric acid, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**etching solution** containing fluoride for pretreatment of
Pt plating on Ti substrate)

L58 ANSWER 17 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1994:150114 HCAPLUS

DN 120:150114

ED Entered STN: 19 Mar 1994

TI Novel technique for silica formed by liquid-phase deposition for
low-temperature processed polysilicon TFT

AU Yeh, Ching Fa; Lin, Shyue Shyh; Chen, Chun Lin; Yang, Yu Chi

CS Inst. Electron., Natl. Chiao-Tung Univ., Hsinchu, Taiwan

SO IEEE Electron Device Letters (1993), 14(8), 403-5
CODEN: EDLEDZ; ISSN: 0741-3106

DT Journal

LA English

CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75

AB A novel technique for SiO₂ formation by liquid-phase deposition (LPD) at
nearly room temperature for low-temperature processed (LTP) polysilicon
thin-film
transistor (poly-Si TFT) was developed. LPD-SiO₂ film with a lower P-
etch rate shows its dense structure. LPD-SiO₂ also exhibits good
elec. characteristics. LTP poly-Si TFT's with LPD-SiO₂ as gate insulator
were fabricated and studied. Their characteristics exhibit sufficient
performance for pixel transistor in liquid crystal display (LCD).

ST liq phase deposition silica silicon TFT; gate insulator silica silicon TFT

IT Electric current carriers

- (mobility of, in silicon thin-film transistors with liquid-phase deposited silica)
- IT Surface structure
 - (of silica deposited from liquid phase, thin-film transistor in relation to)
- IT Infrared spectra
 - (of silica films deposited from liquid phase, effect of annealing temps. on)
- IT Kinetics of **etching**
 - (of silica films, by P-etch solution)
- IT Dielectric constant and dispersion
 - Dielectric strength
 - (of silicon thin-film transistors with liquid-phase deposited silica)
- IT Transistors
 - (field-effect insulated-gate, silicon, with liquid-phase deposited silica gate)
- IT Optical imaging devices
 - (liquid-crystal, silicon thin film transistor for pixel transistor in, liquid-phase deposition of silica in relation to)
- IT 7723-14-0P, Phosphorus, uses
 - RL: PREP (Preparation); USES (Uses)
 - (**concentration** of, in source and drain of silicon thin-film transistor)
- IT 7664-39-3, **Hydrofluoric acid**, uses 7697-37-2
 - , **Nitric acid**, uses
 - RL: USES (Uses)
 - (**etching** of silica by **solution** containing)
- IT 10043-35-3, Boric acid, uses 16961-83-4
 - RL: USES (Uses)
 - (in liquid-phase deposition of silica)
- IT 7631-86-9, Silica, properties
 - RL: PEP (Physical, engineering or chemical process); PROC (Process)
 - (liquid-phase deposition of, for silicon thin-film transistor)
- IT 7440-21-3, Silicon, uses
 - RL: USES (Uses)
 - (thin-film transistor, with liquid-phase deposited silica)

L58 ANSWER 18 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1990:640073 HCAPLUS

DN 113:240073

ED Entered STN: 22 Dec 1990

TI Role of redox systems in the mechanism of self-passivation and reactivation of silicon dissolution in **hydrofluoric acid** -**nitric acid-acetic acid** mixtures

AU Izidinov, S. O.; Gaponenko, V. I.

CS Vses. Elektrotekh. Inst., Moscow, USSR

SO Elektrokimiya (1990), 26(9), 1162-6

CODEN: ELKKAX; ISSN: 0424-8570

DT Journal

LA Russian

CC 72-2 (Electrochemistry)

Section cross-reference(s): 76

AB With consideration of the peculiarities of the boundary layer structure and the chemical, diffusion and the associated electrochem. reactions of Si oxidation

and autocatalytic reduction of **HNO3** occurring in them, a mechanism is proposed for the self-passivation and reactivation of **etching** in compns. based on **HF** and **HNO3**. In accordance with this mechanism, the reduction products of NO2 accumulated in the bulk of the

solution lead to an increase in the effects of the redox-couples **HNO₃** /NO₂ and NO₂/NO and to a shift in the steady-state potential of self-dissoln. toward a more pos. value. As a consequence of this, there occurs self-passivation of the **etching** process, reversibly reactivated upon decreasing the excess **concentration** of NO₂ by its oxidation to **HNO₃**.

- ST redox system self passivation silicon; reactivation silicon dissoln acid mixt; **etching** silicon semiconductor acid; nitrogen oxide system **etching** silicon
- IT Reduction, electrochemical
(of **nitric acid** in silicon self passivation and dissoln. reactivation)
- IT Oxidation, electrochemical
(of silicon in **acetic acid-hydrofluoric acid-nitric acid** mixts., self passivation and dissoln. reactivation in relation to)
- IT **Etching**
(of silicon in **hydrofluoric acid-nitric acid-acetic acid** mixts., role of redox systems in self-passivation and reactivation of)
- IT Electric potential
(redox, of nitrous acid-nitrogen dioxide and nitrogen dioxide-nitrogen monoxide, self-passivation and reactivation of silicon dissoln. in acid mixts. in relation to)
- IT Passivation
(self-, of silicon in acid mixts., role of redox systems in)
- IT 7440-21-3, Silicon, reactions
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(dissoln. of, in **hydrofluoric acid-nitric acid-acetic acid** mixts., role of redox systems in self passivation and reactivation of)
- IT 10102-44-0P, Nitrogen dioxide, preparation
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in **nitric acid** reduction during self-passivation and reactivation of silicon dissoln. in acid mixture)
- IT 7782-77-6, Nitrous acid 10102-43-9, Nitrogen oxide (NO), reactions
RL: PRP (Properties)
(redox couple, with nitrogen dioxide, self-passivation and reactivation of silicon dissoln. in acid mixture in relation to)
- IT 16919-19-0, Diammonium hexafluorosilicate **16961-83-4**, Hexafluorosilicic acid
RL: PRP (Properties)
(silicon dissoln. in acid mixts. containing, role of redox system in self passivation in relation to)
- IT **7697-37-2, Nitric acid**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(silicon dissoln. in mixture of **acetic acid** and **hydrofluoric acid** and, role of redox systems in self passivation and reactivation of)
- IT 7664-39-3, **Hydrofluoric acid**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(silicon dissoln. in mixture of **acetic acid** and **nitric acid** and, role of redox systems in self passivation and reactivation of)
- IT **64-19-7, Acetic acid**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(silicon dissoln. in mixts. of **hydrofluoric acid** and **nitric acid** and, role of redox systems in self passivation and reactivation of)

L58 ANSWER 19 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1989:622658 HCAPLUS

DN 111:222658

ED Entered STN: 09 Dec 1989

TI Manufacture of silica films

IN Aida, Takuji; Nagayama, Hirotsugu; Hishinuma, Akimitsu; Kawahara, Hideo

PA Nippon Sheet Glass Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C23C018-00

ICS C03B019-00; C03C017-02

ICA C03C015-00

CC 75-2 (Crystallography and Liquid Crystals)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01028377	A2	19890130	JP 1987-184569	19870723
PRAI	JP 1987-184569		19870723		
AB	The title process comprises contact of the substrate with a H ₂ SiF ₆ solution saturated with SiO ₂ at 60-70°. A SiO ₂ film 120 nm thick was formed on a Na-Ca silicate glass by immersing the substrate for 4 h in the solution, which was circulated for filtration and formed to a layered flow. The film had 5.6 nm/s in etching rate with a HF-HNO₃-H₂O etchant , indicating a low concentration of OH in the film.				
ST	silica film low hydroxyl content; acid soln silica film pptn				
IT	7631-86-9, Silica, properties				
	RL: PRP (Properties)				
	(precipitation of films of, low hydroxyl content, from acid solution)				
IT	16961-83-4				
	RL: PRP (Properties)				
	(silica-supersatd., precipitation of silica films of low hydroxyl contents from)				

L58 ANSWER 20 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1988:446940 HCAPLUS

DN 109:46940

ED Entered STN: 05 Aug 1988

TI Marker structures for alignment in semiconductor device manufacture

IN Jacobs, Joachim; Weschenfelder, Dietmar; Ettrich, Peter; Moehr, Hans;

Eichler, Christoph; Weher, Joerg Ulrich

PA VEB Halbleiterwerk, Ger. Dem. Rep.

SO Ger. (East), 4 pp.

CODEN: GEXXA8

DT Patent

LA German

IC ICM H01L021-306

ICS H01L021-66; H01L021-31

CC 76-3 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DD 247543	A1	19870708	DD 1986-288564	19860401
PRAI	DD 1986-288564		19860401		
AB	In the fabrication of semiconductor devices using planar epitaxy techniques, accurate registration of features above the epitaxial layer				

with features below the layer is accomplished with the aid of marker structures which are revealed by an initial treatment, especially on excavation,
 at specified locations in the epitaxial layer. A Si substrate was provided with registerable relief structures by masking and doping of selected regions, and a layer of epitaxial Si was then grown over the structures. The epitaxial Si layer displayed relief structures on its surface (which corresponded to, but were shifted laterally from, the reliefs on the substrate) and masks were formed which left selected relief structures and the regions surrounding them on the surface of the epitaxial layer exposed. The exposed Si was then **etched** away using an **etchant** comprising **HNO3** 60-95, **HF** 4-40, **CH3COOH** 0.1-35, **H2(SiF6)** 0.01-1 and **H2O** 10-35 mol % at <293° so that the original relief was exposed for use for registration.

ST semiconductor device registration marker exposure; silicon device registration marker exposure

IT Semiconductor devices
 (fabrication of, exposure of registration markers under epitaxial layers in)

IT **Etching**
 (for exposure of registration markers under epitaxial layers in semiconductor device fabrication)

IT **64-19-7, Acetic acid**, uses and miscellaneous
7664-39-3, Hydrofluoric acid, uses and miscellaneous
7697-37-2, Nitric acid, uses and miscellaneous
16961-83-4
 RL: USES (Uses)
 (**etchant** containing, for exposure of registration markers under epitaxial layers and semiconductor device fabrication)

IT 7440-21-3, Silicon, uses and miscellaneous
 RL: DEV (Device component use); USES (Uses)
 (fabrication of devices from, **etching** for exposure of registration markings under epitaxial layers in)

L58 ANSWER 21 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1985:212734 HCAPLUS
 DN 102:212734
 ED Entered STN: 15 Jun 1985
 TI Aluminum surface preparation
 IN Walls, John E.
 PA American Hoechst Corp., USA
 SO U.S., 6 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 IC ICM C25F003-04
 ICS C25D011-16; C25D011-18
 NCL 204033000
 CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 72

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4502925	A	19850305	US 1984-619105	19840611
	EP 167751	A1	19860115	EP 1985-105850	19850513
	EP 167751	B1	19900718		
	R: CH, DE, FR, GB, LI, NL, SE				
	AU 8542806	A1	19851219	AU 1985-42806	19850523

AU 584899	B2	19890608		
CA 1235380	A1	19880419	CA 1985-482400	19850527
BR 8502751	A	19860212	BR 1985-2751	19850610
JP 61010491	A2	19860117	JP 1985-125265	19850611

PRAI US 1984-619105 19840611

AB A preparation is described of an Al support for lithog. printing plates fabrication. The support having an increased surface area and improved capillary wettability is prepared by etching in an aqueous bath containing **HNO3** and/or HCl ≤ 25 and an inorg. F-containing acid or a salt 1-25%, electrochem. grained and anodized. Thus, a 1100 Al alloy degreased in an alkaline solution was immersed in a composition containing (100%) **HNO3** 100, NH4F 100 g/L for 60 s at 60°, rinsed, dried to provide a highly textured surface containing uniformly distributed nodules 10 μ in diameter, 8-10 μ in height and 40-50 μ from peak-to-peak. The support was then anodized using d.c. electricity and an electrolyte containing 150 g/L of H2SO4, hydrophilized by treating with a 2.2 g/L solution of poly(vinylphosphonic acid) at 65.5° for 30 s, rinsed, dried, coated with a photosensitive composition containing poly(vinyl formal-vinyl alc.-vinyl acetate), H3PO4, phthalocyanine, and a condensation product of 3-methoxy-4-diazodiphenylamine sulfate and 4,4'-bismethoxymethyldiphenyl ether, imagewise exposed and developed. The obtained printing provided 50,000 acceptable copies.

ST aluminum support etching lithog plate

IT Lithographic plates

(aluminum surface preparation for support for, **etching** in, in aqueous solution containing **nitric acid** and/or hydrochloric acid and inorg. fluorine-containing acid or salt)

IT Sulfonic acids, uses and miscellaneous

RL: USES (Uses)

(electrochem. graining electrolyte containing, in treatment of aluminum support for lithog.)

IT 144-62-7, uses and miscellaneous 7446-70-0, uses and miscellaneous
7722-84-1, uses and miscellaneous 7727-21-1 7727-54-0 7775-27-1
10043-35-3, uses and miscellaneous 13473-90-0 15092-81-6 18697-38-6

RL: USES (Uses)

(electrochem. graining electrolyte containing, in treatment of aluminum support for lithog.)

IT 7647-01-0, uses and miscellaneous **7697-37-2**, uses and miscellaneous

RL: USES (Uses)

(**etching solution** containing inorg. fluorine-containing acid and, for surface preparation of aluminum plate, for lithog.)

IT 1341-49-7 7664-39-3, uses and miscellaneous 12125-01-8 16872-11-0
16919-27-0 16923-95-8 16940-81-1 **16961-83-4**

RL: USES (Uses)

(**etching solution** containing nitric and/or hydrochloric acid and, for surface preparation of aluminum plate, for lithog.)

IT 7429-90-5, uses and miscellaneous

RL: USES (Uses)

(support for lithog. printing plates from, etching solns. for preparation of surface of)

L58 ANSWER 22 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1984:634429 HCAPLUS

DN 101:234429

ED Entered STN: 22 Dec 1984

TI Detecting structure inhomogeneities in titanium alloy samples and welded parts

IN Thoma, Martin

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

PA Motoren- und Turbinen-Union Muenchen G.m.b.H., Fed. Rep. Ger.
 SO Eur. Pat. Appl., 9 pp.
 CODEN: EPXXDW
 DT Patent
 LA German
 IC C23F001-00; G01N001-32
 CC 56-8 (Nonferrous Metals and Alloys)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	EP 120340	A1	19841003	EP 1984-102201	19840301
	EP 120340	B1	19861112		
	R: AT, BE, CH, DE, FR, GB, IT, LI, NL, SE				
	US 4551434	A	19851105	US 1984-582253	19840222
	AT 23576	E	19861115	AT 1984-102201	19840301
PRAI	DE 1983-3309448		19830316		
	EP 1984-102201		19840301		

AB An **etching** bath of 40-80°, for improved contrast of α- and β-phase, grain boundaries, segregations of a phase or impurities (O- and N segregations) in Ti alloys and their welds, contains CrO3, **HF**, and/or H2SiF6 and As, Sb, or Si compound at mol ratios F/As(Sb,Si) 5-8, and Cr/As(Sb,Si) 3-6 at As,Sb, or Si 0.1-2 mol/L optionally H2SiF6 is replaced by Sb2O3, SbF3, or AsO3 at the above mol. ratio and **concentration** The specimen is vapor-phase degreased (trichloroethene) blasted with 270 mesh Al2O3 abrasive at 4-5 bar, the surface is preetched 2-20 min with **HNO3-HF** solution, especially 400 **HNO3** and 5 g **HF**/L, and rinsed prior to **etching** for metallog., and rinsed again, and dried. Thus, the specimen surface, after the above pretreatment, was finish-**etched** in a CrO3/H2SiF6/**HF** solution at mol ratio 1.8/10.6/0.3, water rinsed, and dried. The layer thickness, removed by 15-min **etching** in **HNO3-HF solution** was 2-4 and in CrO3-**HF**-H2SiF6 .apprx.2 μ. Welded specimens were wet-blasted with 240-mesh abrasive, pre-**etched** 10 min in **HNO3** 400 and **HF** 5 g/L, washed 0.25 min each at 20°, finish-**etched** 5-15 min in CrO3-**HF**-H2SiF6 at mol ratio 3:0.6:1.2 and 60°, water washed at 20°, and dried by compressed air.

ST titanium weld structure **etching** bath; metallog titanium alloy weld

IT Welds

(titanium alloy, **etching** bath for, for metallog.)

IT **Etching**

(selective, of titanium alloys and welds, for metallog., baths for)

IT Titanium alloy, base

RL: PRP (Properties)

(structure of, **etching** bath for metallog. of)

IT 7697-37-2, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(**etching** in bath containing, of titanium alloys for metallog.)

IT 7664-39-3, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(**etching** in **nitric acid** bath containing, of titanium alloys for metallog.)

IT 7783-56-4 16961-83-4

RL: USES (Uses)

(finish **etching** in bath containing, of titanium alloys for metallog.)

IT 1309-64-4, reactions 1327-53-3 1333-82-0

RL: RCT (Reactant); RACT (Reactant or reagent)

(finish **etching** in bath containing, of titanium alloys for metallog.)

L58 ANSWER 23 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1985:35235 HCAPLUS

DN 102:35235

ED Entered STN: 26 Jan 1985

TI Electrochemical **etching** of titanium alloy castings

AU Griess, J. C.; David, S. A.; Gray, R. J.

CS Oak Ridge Natl. Lab., Oak Ridge, TN, 37830, USA

SO Journal of Applied Electrochemistry (1984), 14(5), 573-85

CODEN: JAELEBJ; ISSN: 0021-891X

DT Journal

LA English

CC 72-7 (Electrochemistry)

Section cross-reference(s): 75

AB An electrochem. method is used to **etch** cast binary Ti alloys in an attempt to show their dendritic structures. Studies showed that when an alloy could be activated in either H₂SO₄, H₂SiF₆ or oxalic acid, its anodic polarization curve had the same general shape and passivation potential for all alloys independent of alloying element of **concn**. Consequently, in acid solns., electrochem. **etching** was conducted at a constant potential slightly less noble than the passivation potential where the anodic c.d. was near the maximum. Of the alloys examined, only Ti-15%Cr was **etchable** in a **concentrated** caustic **solution** and **etching** occurred only in the transpassive potential region. Under these conditions, the dendritic structure is shown in alloys containing 15%Cr, Ta, and Mo; at lower concns. or in the case of the 15%Nb alloy, the dissoln. rates of the dendritic and interdendritic materials were too similar to differentiate between them on the **etched** surface.

ST titanium alloy casting electrochem **etching**; sulfuric acid
titanium alloy electroetching; oxalic acid titanium alloy electroetching;
fluorosilicic acid titanium alloy electroetching; dendrite structure
electroetching titanium alloy; molybdenum titanium alloy casting
electroetching; niobium titanium alloy casting electroetching; tantalum
titanium alloy casting electroetching

IT Crystal dendrites
(in titanium alloy castings, electrochem. **etching** in acid
solns. in relation to)

IT Electrolytic polarization
(anodic, of titanium alloy casting, in acid and alkaline solns.)

IT **Etching**
(electrochem., of titanium alloy castings, dendritic structure in
relation to)

IT Cast metals and alloys
RL: RCT (Reactant); RACT (Reactant or reagent)
(titanium alloys, electrochem. **etching** of, in acid solns.,
dendritic structures in relation to)

IT 1310-58-3, properties
RL: PRP (Properties)
(anodic polarization of titanium alloy castings in solution containing)

IT **7697-37-2**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**etching** by **hydrofluoric acid**, lactic
acid and, of titanium-molybdenum alloy castings, dendritic structure in
relation to)

IT 7664-39-3, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)

(**etching by nitric acid solution**
with lactic acid and, of titanium-molybdenum alloy castings, dendritic structure in relation to)

IT 50-21-5, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**etching by nitric acid, hydrofluoric acid** and, of titanium molybdenum alloy castings, dendritic structure in relation to)

IT 12635-50-6 93123-30-9
RL: PRP (Properties)
(**etching of castings of, electrochem., in acid solns.**)

IT 7440-32-6, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**etching of castings of, in acid solution**)

IT 55929-82-3 93123-29-6 93123-31-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(**etching of, electrochem., in acid solns., dendritic structure in relation to**)

IT 144-62-7, uses and miscellaneous 7664-93-9, uses and miscellaneous
RL: USES (Uses)
(titanium alloy casting electrochem. **etching in soln** . containing, dendritic structures in relation to)

IT **16961-83-4**
RL: PRP (Properties)
(titanium alloy casting electrochem. **etching in soln** . containing, dendritic structures in relation to)

L58 ANSWER 24 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1983:426664 HCAPLUS
DN 99:26664
ED Entered STN: 12 May 1984
TI Activation of titanium surfaces
IN Thoma, Martin
PA Motoren- und Turbinen-Union Muenchen G.m.b.H., Fed. Rep. Ger.
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT Patent
LA German
IC C23G001-10; C23F001-00; C25D005-38; C23C003-00
CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 72

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 72986	A1	19830302	EP 1982-107356	19820813
	EP 72986	B1	19841227		
	R: AT, BE, CH, DE, FR, GB, IT, LI, NL, SE				
	DE 3133189	A1	19830317	DE 1981-3133189	19810821
	DE 3133189	C2	19840209		
	US 4414039	A	19831108	US 1981-322585	19811118
	AT 10954	E	19850115	AT 1982-107356	19820813
	JP 58042790	A2	19830312	JP 1982-143971	19820819
	JP 01053360	B4	19891114		
PRAI	DE 1981-3133189		19810821		
	EP 1982-107356		19820813		

AB Ti is activated for metal plating after wet blasting with Al₂O₃ and **etching with a HNO₃-HF solution** by using a solution of **HF** 0.3, CrO₃ 1.8, and H₂SiF₆ 0.5 mol/L for 15-50 min at 35-100°. As all the processing steps are possible at

<60°, a wax coating is feasible for selective plating. The process excludes H absorption, and attainable metal adherence is ≤ 70 N/mm².

ST titanium surface activation plating; **hydrofluoric acid** activation titanium plating; chromic acid activation titanium plating; hexafluorosilicic acid activation titanium plating

IT 1333-82-0 7664-39-3, uses and miscellaneous **16961-83-4**
 RL: USES (Uses)
 (in titanium surface activation solution, for metal plating)

IT 7440-32-6, uses and miscellaneous
 RL: USES (Uses)
 (surface activation of, for metal plating, solns. for)

L58 ANSWER 25 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1977:143862 HCAPLUS
 DN 86:143862
 ED Entered STN: 12 May 1984
 TI Comparative evaluation of the intercrystalline corrosion tendency of steel 03Kh21N21M4B (ZI-35) by the method of potentiostatic etching
 AU Fokin, M. N.; Petrovskaya, V. A.; Nikolaeva, G. N.
 CS Nauchno-Issled. Inst. Udobr. Insektofungits., Moscow, USSR
 SO Zashchita Metallov (1977), 13(1), 71-5
 CODEN: ZAMEA9; ISSN: 0044-1856
 DT Journal
 LA Russian
 CC 55-9 (Ferrous Metals and Alloys)
 Section cross-reference(s): 67

AB Steel Kh21N21M4 [37242-06-1] containing 0.005-0.06% C was heat-treated and its susceptibility to intercryst. corrosion was tested in (a) HPO₃ extract contg P₂O₅ 32, F as H₂SiF₆ 2, and SO₃ as H₂SO₄ 1.6% at 100°, (b) 10% H₂SO₄ at b.p., and (c) 10% **HNO₃**-3% **HF** at 80°. The polarization curves were taken at 0.5 V/h. A 2-h **etching** of tempered steel in **solution** a at 0.15-0.5 V revealed a weakly-etched network of grain boundaries, which could not be achieved in b. In the b solution, corrosion tendency after 2-h etching was detected in tempered steel containing $\geq 0.06\%$ C at 0.25 V. The tendency of low-C steel to intercryst. corrosion in a solution was detected early in c at 0.25-0.5 V.

ST steel intercryst corrosion

IT 7664-38-2, reactions 7664-39-3, reactions 7664-93-9, reactions **7697-37-2**, reactions **16961-83-4**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (corrosion by, of steel, intergranular)

IT 37242-06-1
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (intergranular corrosion of, in acids)

L58 ANSWER 26 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1976:167894 HCAPLUS
 DN 84:167894
 ED Entered STN: 12 May 1984
 TI Preparation of the surface of metals for one-coat enameling of household appliance and commercial equipment components and products
 AU Eiduks, J.; Kovner, M. I.; Paukss, P.; Rudakova, S. V.; Pauksa, I.
 CS USSR
 SO Neorganicheskie Stekla, Pokrytiya i Materialy (1975), 1, 173-80
 CODEN: NSPMDB; ISSN: 0132-7267
 DT Journal
 LA Russian
 CC 55-6 (Ferrous Metals and Alloys)
 AB Under laboratory conditions methods for steel surface treatment 1-coat enameling

were studied. Sheet steel 08kp [11103-16-5] 0.8-1.2 mm thick was used. The quality of treatment of the surface was determined visually before enameling and then after bonding of the enamel coating to the steel. Enameling was carried out by dipping, pouring, or electrophoretic deposition. The enamel coatings were fired at 820-80° for 2-4 min. Etching of the steel in H2SO4, HNO3, H3PO4, and H2SiF6 under different conditions was examined. Etching in H2SO4 followed by treatment with a Ni phosphate solution is recommended for preparation of the metal surface.

To prepare the surfaces of parts of simple configuration, it is possible to use **combined** degreasing and **etching**.

- ST steel etching prepn enameling; sulfuric acid etching steel; nickel phosphate treatment steel
- IT Enameling
 - (of steel sheets, surface treatment for)
- IT Etching
 - (of steel sheets, with acids before enameling)
- IT 11103-16-5, reactions
 - RL: RCT (Reactant); RACT (Reactant or reagent)
 - (etching of, followed by nickel salt-phosphate treatment for enameling)
- IT 7786-81-4
 - RL: USES (Uses)
 - (etching with phosphoric acid or sulfuric acid and, of steel sheets before enameling)
- IT 7727-54-0
 - RL: USES (Uses)
 - (etching with sulfuric acid and, of steel for enameling)
- IT **7697-37-2**, reactions
 - RL: RCT (Reactant); RACT (Reactant or reagent)
 - (etching with sulfuric acid and, of steel sheets before enameling)
- IT 7664-38-2, reactions
 - RL: RCT (Reactant); RACT (Reactant or reagent)
 - (etching with, containing nickel sulfate and zinc phosphate, of steel sheets before enameling)
- IT 7664-93-9, reactions
 - RL: RCT (Reactant); RACT (Reactant or reagent)
 - (etching with, of steel sheets before enameling)
- IT **16961-83-4**
 - RL: USES (Uses)
 - (etching with, of steel sheets for enameling)
- IT 1333-82-0
 - RL: USES (Uses)
 - (passivation with, of steel, after etching with sulfuric acid for enameling)
- IT 127-09-3 7758-98-7, uses and miscellaneous
 - RL: USES (Uses)
 - (steel treatment with, after acid etching, for enameling)
- IT 7631-99-4, uses and miscellaneous 13598-37-3
 - RL: USES (Uses)
 - (steel treatment with, for enameling)

L58 ANSWER 27 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1960:21365 HCAPLUS
 DN 54:21365
 OREF 54:4171d-f
 ED Entered STN: 22 Apr 2001
 TI Forming passive films on semiconductors
 IN Harrington, Allan L.; Hall, Thomas C.
 PA Pacific Semiconductors, Inc.

DT Patent
 LA Unavailable
 CC 3 (Electronic Phenomena and Spectra)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2913358		19591117	US	
	GB 925084			GB	

AB A passive film is formed on the surface of Si semiconductor devices by generating a polysiloxane film over a thin film of esterified Si; this provides a surface which is continuous rather than one having an interface. The Si is **etched** in a **solution** having a **HF:HNO3** volume ratio of 2:1 and then is quickly immersed in a quench solution, e.g. EtOH, for 5 sec. to 5 min. The H₂SiF₆ at the Si surface is esterified to form an ester film 100-1000 A. thick. This film is then caused to react with a mixture of polyfunctional organosilane monomers to form by cocondensation a cross-linked polymer which is integral with the Si surface. The mixture is preferably of alkoxy-substituted silanes in the relative amts. of 1-5% by weight monofunctional (chain-terminating), 5-45% difunctional (to increase plasticity), and the rest trifunctional. A typical composition contains 40 ml. hydrolyzed methyltriethoxysilane in toluene, 8 g. diphenylsilanediol, 40 ml. hexamethyldisiloxane, and 1.5 g. N-phenyl-2-naphthylamine. The Si is immersed until a coating of the desired thickness is built up, and then partial polymerization is brought about by heating to 80-100° for 5 min. The final curing takes place at 150-200° during at least 6 hrs.

IT Siloxanes
 (films (passive) of, on Si semiconductors)
 IT Condensation, chemical
 (of siloxanes (polyfunctional) with fluosilicic acid ester layers on Si semiconductor surfaces)
 IT Semiconductors
 (passive films on)
 IT 7803-62-5, Silane
 (derivs., in manufacture of passive films on Si semiconductors)
 IT 7440-21-3, Silicon
 (elec. semiconductors, passive polysiloxane films over esterified H₂SiF₆ layer on)
 IT **16961-83-4**, Fluosilicic acid, H₂SiF₆
 (esters of, on Si semiconductor surface, cocondensation with organosilane in formation of passive polysiloxane films)
 IT 107-46-0, Disiloxane, hexamethyl-
 (in manufacture of passive films on Si semiconductors)
 IT 947-42-2, Silanediol, diphenyl- 2445-53-6, Silanetriol, methyl-
 (mixts. containing, in manufacture of passive films on Si semiconductors)

L58 ANSWER 28 OF 28 JAPIO (C) 2004 JPO on STN
 AN 2002-115083 JAPIO
 TI **ETCHING SOLUTION, ITS PRODUCTION METHOD, ETCHING METHOD AND METHOD FOR PRODUCING SEMICONDUCTOR DEVICE**
 IN HAGA SADA0; ITO KATSUJI *applicants*
 PA MITSUBISHI CHEMICALS CORP
 NIPPON KASEI CHEM CO LTD
 PI JP 2002115083 A 20020419 Heisei
 AI JP 2001-227784 (JP2001227784 Heisei) 20010727
 PRAI JP 2000-231018 20000731
 SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2002
 IC ICM C23F001-24

ICS C23F001-46; H01L021-308

AB PROBLEM TO BE SOLVED: To provide an **etching** solution in which the selection of a suitable **etching** rate can easily be performed, a stable **etching** rate can be achieved, further, the reutilization of which is easily possible, and is expanded and improvement in flatness and glossiness of the wafer, restraint of waviness of whole wafer that are required for a silicon wafer, in particular, can be expected enough.

SOLUTION: This **etching** solution at least contains **hydrofluoric acid, nitric acid** and **hexafluorosilicic acid**, and the concentration of **hexafluorosilicic acid** is ≥ 10 weight%.

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